NORTHEAST ELECTRONICS

A DIVISION OF NORTHERN TELECOM, INC.

INSTRUCTION MANUAL

MODEL TTS-26BXPS

POWER SUPPLY

No. A0026-57-600 ISSUE 1 DATE SEPT 1975

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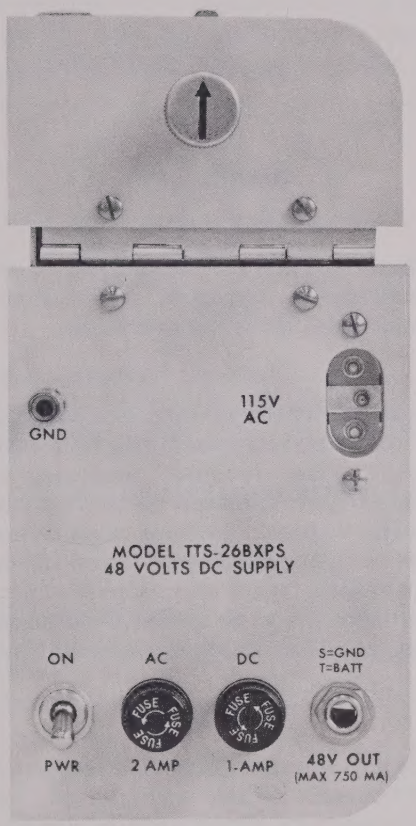

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1.1 INTRODUCTION.

1.2 The Model TTS 26BXPS Power Supply provides dc power needed to operate the Model TTS 26B Pulse Test Set and its accessories. The power supply comes in two versions. One version operates from a 115 Vac, 60 Hz power source. The other version operates from a 230 Vac, 60 Hz power source.

1.3 The power supply is designed in modular form and may be used as one of three accessories which mount in the test set cover. Panels are available for mounting on the right side or in the center of the test set cover. A storage compartment for an 8-ft power cord is included with the power supply.

1.4 SPECIFICATIONS.

1.5 Table 1—1 lists the specifications of power supply Model TTS 26BXPS.

1.6 OPERATION.

1.7 Operation of the power supply is obvious, therefore, no specific operating procedures are included in this manual. However, one precaution should be observed . Connections to the supply output terminals should be made before applying power to the unit. Likewise, the power supply should be turned off before disconnecting the equipment attached to its output terminals.

1.8 CIRCUIT DESCRIPTION.

1.9 See Figure 1—3, the power supply schematic diagram. Fuse F1 provides input current protection. The ac input voltage across the transformer primary is stepped down to about 60 volts ac at the secondary. Full-wave bridge rectifier CR6-CR9, in conjunction with filter capacitors C1 and C2, converts this ac voltage to a raw dc voltage of approximately 80 volts dc. The raw dc voltage drives the dc regulator.

1.10 The dc regulator is a conventional series-pass voltage regulating circuit. Transistors Q2 and Q3 are the series-pass element while transistor Q1 functions as the error amplifier which controls the conduction of the series-pass element. Zener diode CR1 supplies —25 volts reference to the error amplifier. A sample of the output voltage is provided by resistors R1 and R2 in conjunction with potentiometer R7. The potentiometer allows the output voltage to be set between —40 and —55 volts dc. The error amplifier draws its operating voltage from the raw dc voltage via resistor R4. Capacitor C3 filters the output voltage while fuse F2 protects against excessive output current.

1.11 Diode chain CR2-CR5 provides overcurrent protection by limiting the output current to a safe value. Under normal load, the voltage across current sensing resistor R3 is insufficient to forward bias the diode chain and the diode chain has no effect on the regulator's operation. However, under overcurrent conditions, the

Table 1—1. Model TTS 26BXPS Specifications.

OUTPUT VOLTAGE:	48 ± 4 Vdc
INPUT VOLTAGE:	110-120 Vac, 60 Hz or 220-240 Vac, 60 Hz
MAX LOAD CURRENT:	750 mA
MAX RIPPLE:	100 mV
NO LOAD TO FULL LOAD REGULATION:	1.5 Vdc
FUSES:	2A for ac input; 1A for dc output
SIZE:	3 7/8-in. w x 7 13/16-in. h x 5-in. d (9.8 cm x 19.8 cm x 12.7 cm)
WEIGHT:	4 pounds 10 ounces (2.1 kg)

diode chain begins to conduct when the voltage across resistor R3 exceeds three diode drops. The conducting diode chain clamps the output of error amplifier Q1 four diode drops below the output voltage. This prevents series-pass element Q2/Q3 from supplying additional output current. The output current remains limited until the cause of the overcurrent condition is removed.

1.12 MAINTENANCE.

1.13 For aid in troubleshooting the power supply refer to Table 1–2 which gives normal operating voltages at test points in the power supply under no load and full load conditions. The locations of the test points referred to in Table 1–2 are shown in Figures 1–2 and 1–3.

1.14 To access the test points, the power supply must be removed from the cover of the pulse test set. Use caution when handling the exposed power supply.

Table 1–2. TTS 26BXPS Normal Operating Voltages.

TEST POINT	NO LOAD	FULL LOAD
A/M	60.5 Vac	56.4 Vac
B	82.2 Vdc	69.8 Vdc
C	81.8 Vdc	60.3 Vdc
D	49.3 Vdc	49.4 Vdc
E	49.3 Vdc	48.0 Vdc
F	81.1 Vdc	58.3 Vdc
G	49.6 Vdc	48.9 Vdc
H	49.9 Vdc	49.6 Vdc
I	32.3 Vdc	31.6 Vdc
J	16.9 Vdc	16.6 Vdc
K	25.6 Vdc	25.1 Vdc
L	25.0 Vdc	24.8 Vdc

All dc voltages measured with respect to J2 (ground).
Input voltage: 117 Vac
Full load output current: 750 mA
Voltages measured with Weston meter Model 1242

1.15 ADJUSTMENT.

1.16 To adjust the power supply output voltage, perform the following steps.

a. Remove the power supply from the test set cover.

b. Make sure the power switch is off.

c. Connect voltmeter (Weston Model 1242 or equivalent) to test point E and J (ground). See Figure 1–2.

d. Connect power supply to a 115 Vac, 60 Hz source (or 230 Vac, 60 Hz source) as required.

e. Connect power supply output jack to the test set power input jack.

f. Turn power supply, test set, and voltmeter on. Allow several minutes for warm-up.

g. Observe that voltmeter reads 48 ± 0.1 Vdc. If necessary, adjust power supply potentiometer R7 to obtain an indication of 48 ± 0.1 Vdc.

h. Shut off the power supply, the test set, and the voltmeter.

i. Disconnect voltmeter, power source and test set.

j. Replace power supply in the test set cover.

1.17 ELECTRONIC PARTS LIST.

1.18 Table 1–3 lists the electronic parts of the Model TTS 26BXPS power supply. Table 1–4 lists the electronic parts of the printed circuit board. Figure 1–1 shows the power supply component locations. Figure 1–2 shows the printed circuit board component locations.

1.19 SCHEMATIC DIAGRAM.

1.20 Figure 1–3 is the schematic diagram of the Model TTS 26BXPS power supply.

Table 1—3. TTS 26BXPS Parts List.

REF DES	DESCRIPTION	MFGR	MFGR P/N	NORTHEAST P/N
A1	Printed circuit board	Northeast Electronics	95588	002657010
F1	Fuse, 2 amp, 3AG	Littelfuse	3AG2	863100600
F2	Fuse, 1 amp, 3AG	Littelfuse	3AG1	863100400
XF1,XF2	Fuseholder, 3AG Panel	Bussman	4KP	863000100
P1	3-Pin male receptacle, ground	Switchcraft	AC3G	652300100
Q3	Transistor	RCA	2N3055	550030550
S1	SPST switch	AH&H	20994-L1	620100700
T1	Transformer for 115 Vac	Signal	56-1	420500100
or				
T1	Transformer for 230 Vac	TECO	5731	420500400

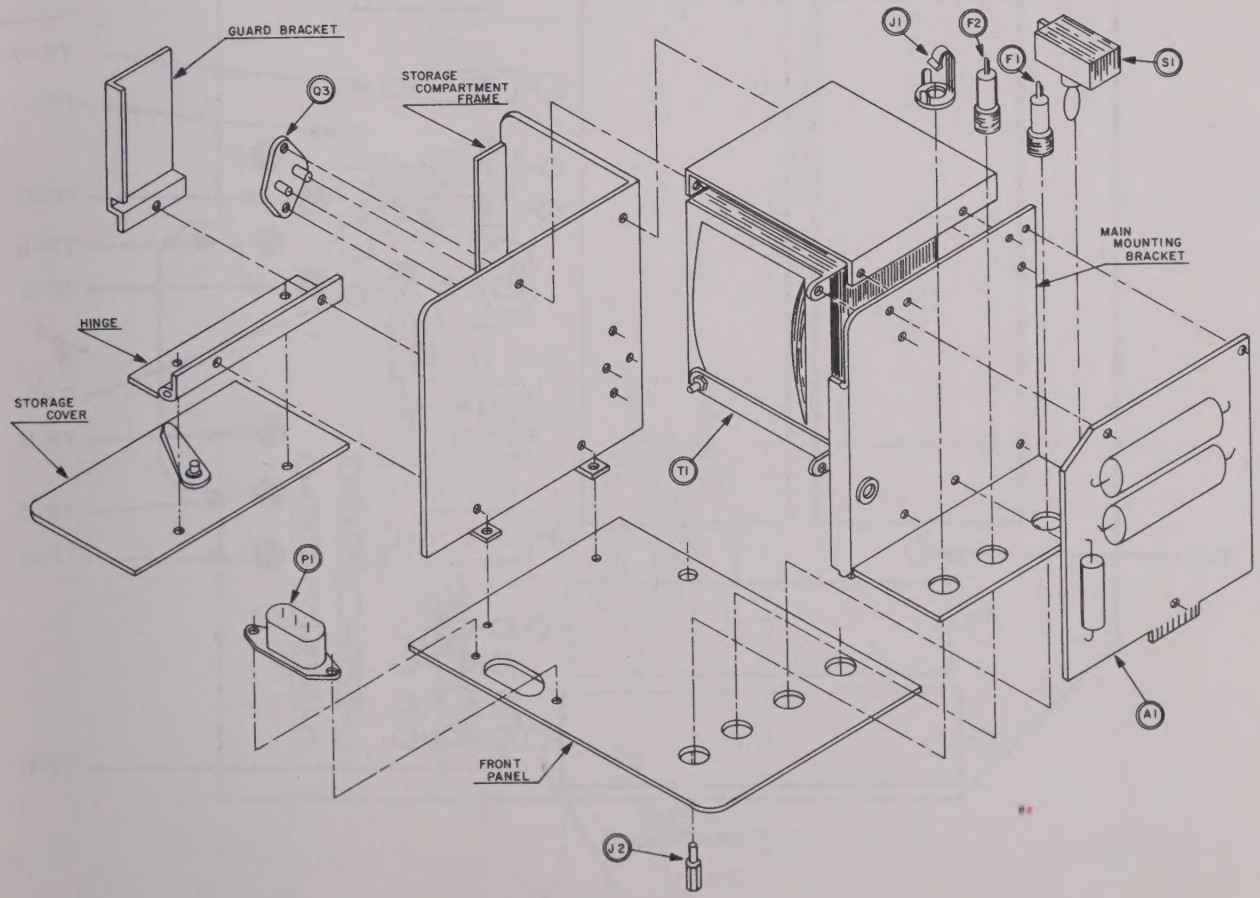


Figure 1—1. Model TTS 26BXPS, Component Location.

Table 1—4. Printed Circuit Board Parts List.

REF DES	DESCRIPTION	MFGR	MFGR P/N	NORTHEAST P/N
C1,2	Capacitor, 300 uF, 100 V	TSI	PA300QU100	301403070
C3	Capacitor, 100 uF, 50 V	Sprague	TE-1309	300200107
CR1	Zener diode, 24 V	Dickson	1N3029B	562030292
CR2,3,4,5	Diode	Trnstron	1N4148	560041480
CR6,7,8,9	Diode	Horizon	1N4003	560040030
Q1,2	Transistor	Fairchild	2N4354	552043540
R1,R2	Resistor 1.2K, 1/2W, 10%	AB	Type EB	200201226
R3	Resistor 1, 3W, 5%	W. Leonard	Type 3X	210300105
R4	Resistor 2.4K, 1/2W, 5%	AB	Type EB	200202425
R5	Resistor 110, 1/2W, 5%	AB	Type EB	200201115
R6	Resistor 12, 12W, 5%	Ohmite	1711	210701205
R7	Potentiometer 1K, 1/4W	Mallory	MTC13L1	231201020

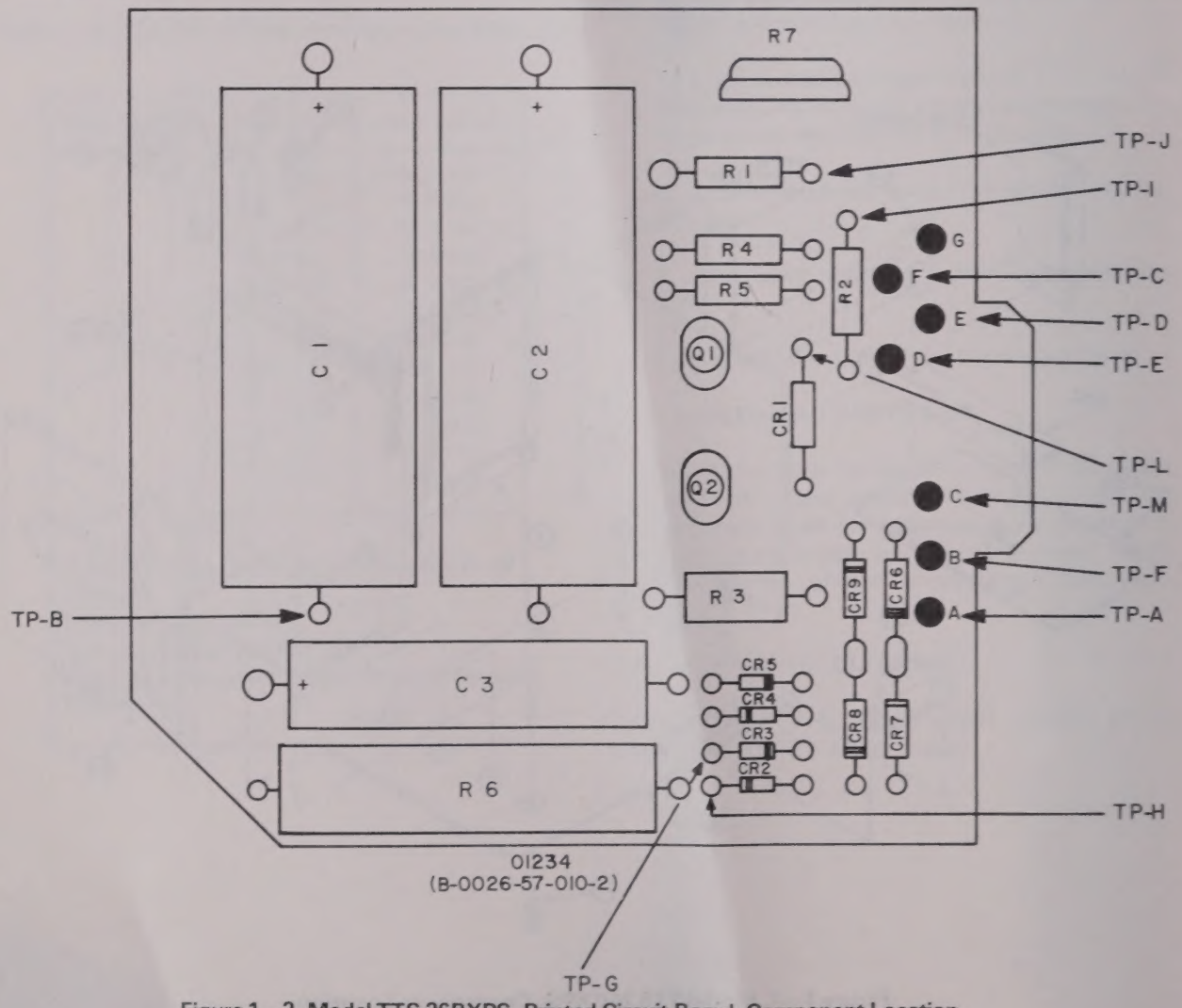


Figure 1—2. Model TTS 26BXPS, Printed Circuit Board, Component Location.

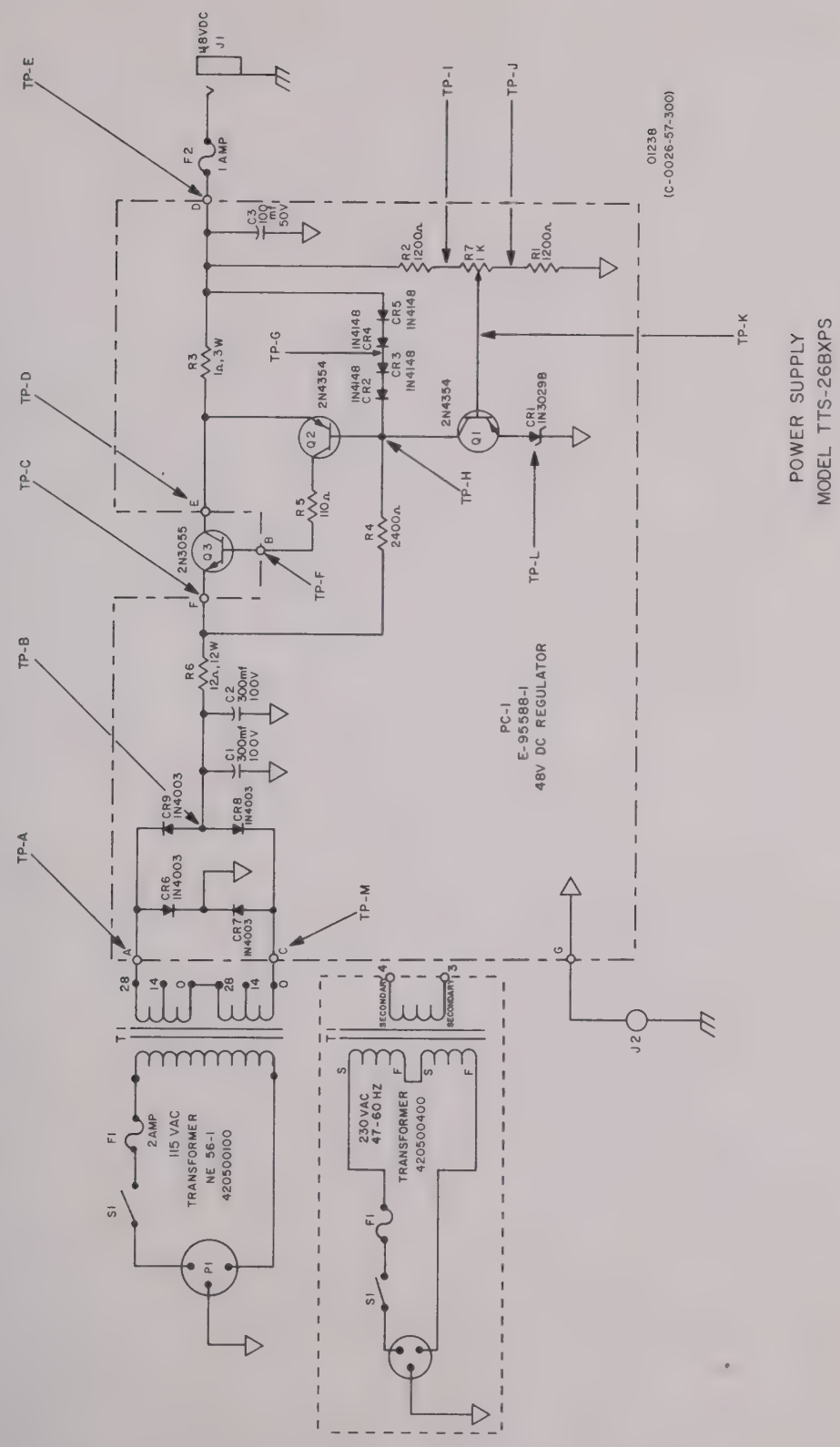
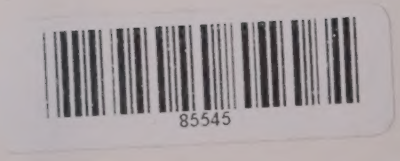


Figure 1—3. Model TTS 26BXPS Power Supply Schematic Diagram.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